

Claims

- 5 1. A magnetic rail brake for a rail vehicle comprising: a magnet supported from the rail vehicle; a guide assembly to guide the magnet for movement in a substantially vertical plane while allowing limited lateral movement; and an extension arm, the extension arm arranged to contact the rail vehicle at a distance from the magnet which is substantially greater than either the maximum extent of vertical movement or the maximum extent of lateral movement of the magnet to thereby reduce tilting of the magnet.
- 10 2. The magnetic rail brake according to claim 1, wherein the extension arm is rigidly attached to the magnet and extends generally therefrom.
- 15 3. The magnetic rail brake according to either claim 1 or claim 2, wherein the arm comprises a first stop surface for interacting with the rail vehicle to prevent tilting of the magnet in a first direction.
- 20 4. The magnetic rail brake according to claim 3, wherein the arm comprises a second stop surface for interacting with the rail vehicle to prevent tilting of the magnet in a second direction opposite to the first direction.
5. The magnetic rail brake according to any of the preceding claims, wherein the arm extends laterally outwardly away from the centreline of the train.
- 25 6. The magnetic rail brake according to any of the preceding claims, wherein the arm extends generally vertically.
7. The magnetic rail brake according to any of the preceding claims, wherein the arm comprises two branches extending in different directions.

8. The magnetic rail brake according to any of the preceding claims, wherein the arm comprises adjustable stop means.
magnet and arm can rotate around the pivot and the extendable arm can extend to
- 5 9. The magnetic rail brake according to any of the preceding claims, wherein the rail vehicle is provided with adjustable counterstop means.
- 10 10. The magnetic rail brake according to any of the preceding claims, further comprising an actuation device causing the magnet to be attracted to the rail.
11. The magnetic rail brake according to any of the preceding claims, further comprising a tilt detection device adapted to prevent actuation of the actuation device on tilting of the magnet by more than a given angle.
12. The magnetic rail brake according to claim 1, wherein the guide means comprises a
15 laterally sliding pivot arranged on the rail vehicle and the guide extension comprises an arm, rigidly attached to the magnet and extending laterally to the sliding pivot whereby the magnet and arm can rotate around the pivot and slide laterally with respect to the rail vehicle.
- 20 13. The magnetic rail brake according to claim 12, wherein the laterally sliding pivot comprises a profiled slot.
- 25 14. The magnetic rail brake according to claim 1, wherein the guide means comprises a pivot arranged on the rail vehicle and the guide extension comprises an extendable arm, rigidly attached to the magnet and extending laterally to the pivot whereby the magnet and arm can rotate around the pivot and the extendable arm can extend to allow lateral movement of the magnet with respect to the rail vehicle.

15. The magnetic rail brake according to any preceding claim, wherein the magnet is constrained to tilt no more than 6° in either direction.

5 16. The magnetic rail brake according to any preceding claim, wherein the magnet is constrained to tilt no more than 3° in either direction.

17. The magnetic rail brake according to any preceding claim, wherein the suspension means comprises a compression or tension spring.

10 18. The magnetic rail brake according to any of claims 1 to 13, wherein the suspension means comprises an actuator device.

15 19. A method of controlling the maximum permitted tilt of a magnet in a magnetic rail brake, the magnet being arranged for vertical and lateral movement, comprising rigidly attaching an extension arm to the magnet and controlling the movement of the end of the extension arm distant from the magnet, the length of the extension arm being substantially greater than either the maximum extent of vertical movement or the maximum extent of lateral movement of the magnet, to thereby control tilting of the magnet.

20 20. The method of claim 19 comprising a magnetic rail brake according to any of claims 1 to 18.